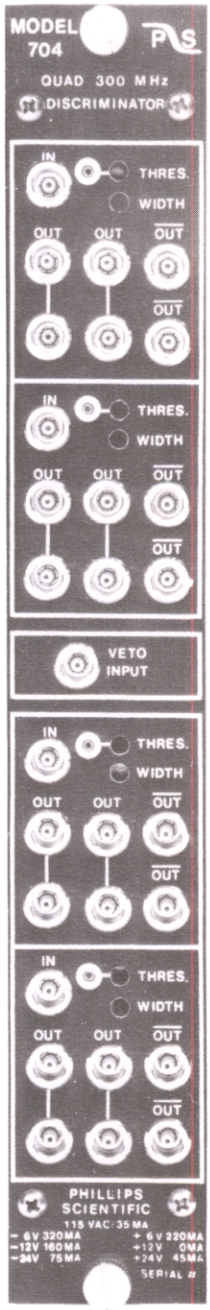
Phillips Scientific

Quad 300 MHz Discriminator

NIM MODEL 704

FEATURES

- GUARANTEED 300 MHz OPERATION
- DEADTIMELESS UPDATING OUTPUTS
- BIN GATE AND FAST VETO INHIBITING
- HIGH FAN-OUT CAPABILITY



DESCRIPTION

Utilizing the most advanced technology, the Model 704 Quad Discriminator boasts a 300 MHz continuous repetition rate capability. The updating feature ensures deadtimeless operation for coincidence applications, while the double-pulse resolution is a remarkable 3.3 nSEC for counting applications. A fifteen-turn potentiometer provides continuous output width adjustment from 2 nSEC to over 50 nSEC for each channel.

The threshold is variable from -10 mV to −1 volt with a fifteen-turn potentiometer on each channel. The threshold setting is easily determined from a front-panel test point that provides a DC voltage equal to ten times the actual threshold.

Inhibiting of the discriminator can be accomplished in two ways. A front-panel LEMO input accepts a NIM level pulse for fast vetoing of all channels. The fast veto is capable of inhibiting a single pulse from a 300 MHz input pulse train. Secondly, a slow bin gate via the rear-panel connector inhibits all four channels and is enabled or disabled from a rear-panel slide switch.

The outputs are the current source type with two pairs of negative bridged outputs and two complements for each channel. When only one output of a bridged pair is used, a double-amplitude NIM pulse (−32 mA) is generated for driving long cables with narrow pulse widths. The outputs have transition times of less than 1.0 nSEC, and their shapes are virtually uneffected by loading the outputs in any combination.

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INPUT CHARACTERISTICS

General:

One LEMO connector input per channel; 50 ohms, ±1%, DC coupled; less than ±2% input reflection for a 1.0 nSEC input risetime. Input protection clamps at +.7 volts and −5 volts and can withstand ±2 amps or ±100 volts for 1 μSEC with no damage to the input.

Threshold:

-10 mV to −1 volt; 15-turn screwdriver adjustment; better than ±0.2%/°C stability; front-panel test point provides a DC voltage ten (10) times the actual threshold setting.

Fast Veto:

One LEMO connector input common to all four (4) channels; accepts normal NIM level pulse (−500 mV), 50 ohms, direct coupled; must precede the negative edge of input pulse by 3 nSEC; capable of gating a single pulse from a 300 MHz continuous pulse train.

Bin Gate:

Rear panel slide switch enables or disables bin slow gate in accordance with TID-20893.

OUTPUT CHARACTERISTICS

General:

Six (6) LEMO connector outputs per channel; two pairs of negative bridged outputs and two complements. The bridged outputs are quiescently 0 mA and −32 mA during output. (−1.6 volts into 50 ohms or −.8 volts into 25 ohms). The complementary outputs are quiescently −16 mA going to 0 mA during output. Output risetimes and falltimes are less than 1.0 nSEC from 10% to 90% levels. The output shapes are optimized when the bridged outputs are 50 ohm terminated.

Width Control:

One control per channel; 15-turn screw-driver adjustment; outputs continuously variable from 2 nSEC to 50 nSEC. Width stability is better than 0.1%/°C of setting.

Updating Operation:

The output pulse will be extended if a new input pulse occurs while the output is active. A 100% duty cycle can be achieved.

GENERAL PERFORMANCE

Continuous Rate:

Greater than 300 MHz, 3 db bandwidth and a throughput counting rate of 300 MHz with output width set at minimum.

Pulse-Pair Resolution:

Better than 3.3 nSEC, with output width set at minimum.

Input to Output Delay:

Less than 8.0 nSEC.

Multiple Pulsing:

No multiple pulsing, one and only one output pulse regardless of input pulse amplitude or duration.

Power Supply Requirements:

− 6 V @ 320 mA	+ 6 V @ 220 mA
−12 V @ 160 mA	+12 V @ 0 mA
−24 V @ 75 mA	+24 V @ 45 mA
115 Vac @ 35 mA	

NOTE: All currents are within NIM specification limits allowing a full-powered bin to be operated without overloading.

Operating Temperature:

0°C to 70°C ambient.

Packaging:

Standard single width NIM module in accordance with TID-20893 and section ND-524.

Quality Control:

Standard 36-hour cycled burn-in with switched power cycles.

Options:

Call Phillips Scientific to find out about available options.

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